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COMMERCIAL SPRAY SCHEMES

Apples, Nectarines, Apricots, Plums,
Pears, and Cherries

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ILLINOIS COMMERCIAL SPRAY SCHEDULE

Apples, Peaches, Nectarines, Apricots, Plums, Pears, and Cherries

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SUPPLEMENT TO CIRCULAR 1151

UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

COLLEGE OF AGRICULTURE

COOPERATIVE EXTENSION SERVICE

IN COOPERATION WITH ILLINOIS NATURAL HISTORY SURVEY

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APPLES

SPECIAL SUGGESTIONS

MATERIALS, RATE PER
100 GALLONS OF WATER

APPLICATION AND PURPOSE

DORMANT TO GREEN TIP

Scale insects, aphids, and red mites

SUPERIOR OIL, 2 gal.

DIFOLATAN 4F, 3 qt. or 5 qt.

Thorough coverage is the most important factor. Varieties susceptible to powdery mildew should be sprayed in dormancy if a mildewcide is to be used in 1/2-inch stage.

Application at the 5-qt. rate during silver tip but before 1/4-inch green should control scab until calyx (or about 6 weeks, depending on rainfall). Difolatan will not control mildew or the rust diseases; therefore, these diseases on susceptible varieties will need additional control measures beginning at pink bud. On these cultivars the 3-qt. rate or an alternate fungicide (see green tip) is suggested. Application later than 1/4-inch green tip will produce severe leaf injury.

Fire blight, black rot, and blotch

COPPER SULFATE, 4 lb., or
8-8-100 BORDEAUX

Mostly for varieties susceptible to fire blight. Use the copper sulfate during dormancy; the bordeaux-oil is best at silver tip. Difolatan, copper sulfate, and bordeaux are compatible with superior oil. Do not apply oil after a Difolatan application.

GREEN TIP THROUGH TIGHT CLUSTER

Aphids

Systemic phosphate insecticide

— plus —

CYPREX 65W, 3/8 to 1/2 lb.

— or —

CYPREX 65W, 1/4 lb., and
Microfine wettable SULFUR, 5 lb.

Scab, powdery mildew

— or —

DIKAR, 2 lb., and
TRITON B1956, 3 oz.

— or —

BENLATE 50W, 2 to 3 oz., and
CAPTAN 50W, 1 lb.

Pests tolerant to currently used pesticides are appearing. Therefore we recommend alternating pesticides during the spray program and using labelled pesticide mixes.

On varieties susceptible to powdery mildew use Dikar, Benlate-captan, or include sulfur with Cyprex. It is important to provide trees with protective fungicides at 7- to 10-day intervals throughout this period. Scab and mildew control must begin at green tip.

Wetting agents increase the effectiveness of Dikar against powdery mildew.

Use 2 oz. of Benlate for normal conditions and 3 oz. during severe scab pressure to deactivate scab. Never use Benlate alone. When Benlate is applied to deactivate scab lesions, combine it with protectant fungicides.

PINK BUD

Scab, powdery mildew, cedar-apple rust

DIKAR, 2 lb., and
TRITON B1956, 3 oz.

— or —

BENLATE 50W, 2 or 3 oz., and
MANZATE 200, or
DITHANE M-45, or
POLYRAM 80W, 12 oz.

If the 3-qt. rate of Difolatan was used, now is the time to apply additional scab sprays.

Rust control must start in this spray. Manzate 200, Dithane M-45, Polyram, Zineb, and Ferbam are good rust fungicides. Ferbam may affect fruit finish of Golden Delicious if used after calyx.

— or —

CYPREX 65W, 1/4 lb., and
Microfine wettable SULFUR, 5 lb., and
a rust fungicide

The control of white apple leaf hoppers is most effective at petal-fall. Apply a phosphate insecticide that has had little or no past usage in the orchard, or a carbamate insecticide at a low dosage. Sevin and Vydate may thin the fruit. Lanate is safest on predatory mites. Vydate will also kill mites and leaf miners.

APPLICATION AND PURPOSE	MATERIALS, RATE PER 100 GALLONS OF WATER	SPECIAL SUGGESTIONS
PINK BUD (continued)		
Curculio, leaf roller	GUTHION (AZINPHOS METHYL) 50W, $\frac{5}{8}$ lb. SOLUBOR, 1 lb.	Only necessary if curculio or leaf roller is severe or if other chewing insects are present. This prevents a deficiency of boron, which affects pollen germination. If ground applications of boron are made, eliminate foliar application. See Circular 1151.
For fertilizing		
EARLY BLOOM		
Fire blight	STREPTOMYCIN, 50 or 100 ppm	On susceptible varieties start streptomycin at full pink. Continue at 3-day intervals through bloom. Above 65° F. use 50 ppm; below 65° F., or when mixed with fungicides, use 100 ppm. Streptomycin uptake is enhanced by using spreader activators, such as glyodin, Regulaid, or glycerin, at 1 to 2 pints per 100 gal.
Scab, powdery mildew, and cedar-apple rust	Same as for PINK BUD	Fungicide applications are not recommended at full bloom as many injure pollen and may interfere with fruit set. During prolonged bloom, however, scab, mildew, and cedar-apple rust must be controlled. When simultaneous application of a fungicide and streptomycin is necessary, Benlate, captan, or glyodin should be used.
CALYX AND FIRST COVER		
Codling moth, leaf roller, curculio, aphids	IMIDAN, 1 $\frac{1}{2}$ lb., or GUTHION (AZINPHOS METHYL) 50W, $\frac{5}{8}$ lb. — plus either — POLYRAM 80W, 2 lb. — or — DIKAR, 2 lb., and TRITON B1956, 3 oz. — or — BENLATE 50W, 2 or 3 oz., and MANZATE 200, or DITHANE M-45, or POLYRAM 80W, 12 oz.	Apply calyx spray when $\frac{3}{4}$ of the petals have fallen, and first cover, 7 to 10 days later. Imidan may be weak for leaf roller control. If the 5-qt. rate of Difolatan was used earlier, scab control fungicides must now be applied. Since Polyram will not control powdery mildew, choose another fungicide on mildew-susceptible varieties or combine a mildewcide (Benlate, sulfur, or Karathane) with Polyram.
Scab, cedar-apple rust, blotch, powdery mildew, frog-eye, quince rust	STREPTOMYCIN, 100 ppm	Control blight in secondary bloom on susceptible varieties. The use of streptomycin after bloom for twig blight control is of limited value. Summer varieties are best thinned at petal-fall. Fall and winter varieties are best thinned according to fruit size, preferably when king fruit is 10 to 11 millimeters in diameter. Add to the calyx spray if there is no ground application of boron. See Circular 1151. Use as needed in the first and third cover sprays. Do not use on Golden Delicious.
Fire blight		
For thinning	See Circular 1151.	
For fertilizing	SOLUBOR, 1 lb. UREA (45 percent N), 5 lb.	

COVER SPRAYS (remainder of the season)

All insects, diseases, and mites

GUTHION (AZINPHOS METHYL) 50W, $\frac{5}{8}$ lb.

— plus either —
POLYRAM 80W, $1\frac{1}{2}$ lb.

— or —
DIKAR, 2 lb., and
TRITON B1956, 3 oz.

— or —
BENLATE 50W, 2 oz., and
CAPTAN 50W, 1 lb.

— or —
CAPTAN 50W, 1 lb., and
ZINEB 75W, 1 lb.

Bitter pit and Jonathan spot CALCIUM CHLORIDE, 2 lb. or 3 lb.

GROWTH REGULATOR SPRAYS

To delay harvest

ALAR, 1 lb.

To advance harvest

ETHREL, 1 pint, and
NAA, 10 ppm, and
2,4,5-TP, 10 ppm

To prevent preharvest drop

See Circular 1151.

As needed at 10- to 14-day intervals after the first cover. Alternate phosphate insecticides are Imidan, Zolone, malathion, parathion, or diazinon. Parathion and diazinon are outstanding for San Jose scale and spotted tentiform leaf miner. Red mites may need suppression through this period. Northern Illinois growers should be aware of apple maggot in late August. If cicadas are laying eggs, spray with Sevin 50W, 2 lb. per 100 gal. water, every 7 days. Also use Sevin for young grasshoppers in or near young orchards.

Dithane M-45, $1\frac{1}{2}$ lb., and Manzate 200, $1\frac{1}{2}$ lb., are alternate fungicides. Rust and powdery mildew control should continue through third cover. Phaltan (folpet), $1\frac{1}{2}$ to 2 lb. per 100 gal., should start at fifth cover if Botryosphaeria is serious.

On Jonathan and Red Delicious add 2 lb. calcium chloride per 100 gal. in the third, fourth, and fifth cover sprays, 3 lb. in later sprays. Limit applications of calcium chloride on Golden Delicious to a trial basis. For low-volume sprays apply 4 lb. per acre in the third, fourth, and fifth cover sprays and 6 lb. per acre in later sprays. Add the calcium chloride last when preparing sprays. See Circular 1151.

Apply 60 to 85 days before normal ripening date to McIntosh, Jonathan, and later varieties.

Apply one to two weeks before desired harvest date to Jonathan and spur-type Red Delicious. Apply as a dilute spray with thorough coverage. Stop-drop materials must be applied with Ethrel.

Alar applied to delay harvest acts as a stop-drop preventative. NAA and 2,4,5-TP may be applied when apples start to drop.

PEACHES, NECTARINES, APRICOTS

DORMANT

Scale insects, red mites, leaf curl

SUPERIOR OIL, 2 gal., and
6-6-100 BORDEAUX

— or —
FERBAM 76W, 2 lb.

The oil controls scale and mites; the fungicide prevents the development of leaf curl. Thorough coverage in the fall or BEFORE buds start to swell in the spring is critically important for control of leaf curl.

Phygon (dichlone) 50W, 1 lb., is also effective against leaf curl, but it is not compatible with oil.

PINK BUD

Tarnished plant bug, curculio, oriental fruit moth

GUTHION (AZINPHOS METHYL) 50W, $\frac{5}{8}$ lb., or
SEVIN 50W, 2 lb., or
LANNATE L, $1\frac{1}{2}$ pt.

Apply when buds show pink. Must not be applied when any blossoms are open, as this will kill honey bees. Guthion is best for curculio.

APPLICATION AND PURPOSE	MATERIALS, RATE PER 100 GALLONS OF WATER	SPECIAL SUGGESTIONS
EARLY TO FULL BLOOM		
Brown rot blossom blight	BENLATE 50W, 4 oz., plus CAPTAN 50W, 1 lb. — or — Microfine wettable SULFUR, 3 lb., and PHYGON (DICHLONE) 50W, ¼ lb.	Try to make two applications, one in early bloom and one in full bloom. Do not use insecticides after first blossoms open.
		Fungi tolerant to currently used fungicides (Benlate) are appearing. Therefore we recommend alternating fungicides in the spray program and using suggested fungicide mixes. Never use Benlate alone. Always combine it with protectant fungicides.
PETAL-FALL THROUGH COVER SPRAYS		
Curculio, oriental fruit moth, stinkbugs, red-banded leaf roller, and catfacing insects Brown rot and peach scab	GUTHION (AZINPHOS METHYL) 50W, ⅝ lb., or IMIDAN, 1½ lb. — plus — Microfine wettable SULFUR, 6 lb.	Parathion and diazinon are alternative insecticides and are especially effective against San Jose scale. For terrapin scale control, either add Systox to the regular spray when needed or use diazinon. Where peach scab has been a problem, continue sulfur or Benlate up to 40 days before harvest; after this period, another fungicide may be used. Sulfur and Benlate are the only fungicides that will control peach scab. A complete application is needed about every 14 days through this period. Normally, insecticides are not used after the first 2nd-brood curculio spray. Watch harvest restrictions. See borer control section. Mycoshield (oxytetracycline) should be applied on a strict 7-day schedule beginning at shuck-split and continuing until 3 weeks before harvest. When warm, rainy weather prevails during early to mid-summer, bacterial spot may become serious. The combination of captan and Cyprex added to the cover sprays may alleviate the problem. Apply as a dilute spray with full coverage just before pit hardening, when the peaches loosen and can be mechanically thinned. Alar advances harvest 3 to 5 days and promotes uniform ripening.
Bacterial spot	MYCOSHIELD 17W, 150 ppm CAPTAN 50W, 1 lb., and CYPREX 65W, ½ lb.	
To advance harvest	ALAR, 1½-2 lb.	
PREHARVEST AND POSTHARVEST FUNGICIDES		
Brown rot	BENLATE 50W, 4 oz., plus CAPTAN 50W, 1 lb. — or — CAPTAN 50W, 2 lb., plus BOTRAN 50W, 2 lb.	Brown rot becomes increasingly important as fruit begins to ripen; therefore, begin a 7-day spray schedule starting 4 weeks prior to harvest. Benlate, captan, Phygon (dichlone), and sulfur all control this disease. During hot weather, sulfur applied just before harvest may reduce fruit finish. Alternate fungicides and observe harvest restrictions.
Rhizopus rot		Botran is specific for Rhizopus rot and is best added to the hydrocooler water as a postharvest dip.
BORER CONTROL		
Peach borer, lesser peach borer, American plum borer	THIODAN 50W, 1½ lb., or GUTHION (AZINPHOS METHYL) 50W, ⅝ lb., or LORSBAN 4E, 1½-2 pt.	Make two to four applications but adhere to harvest restrictions on the different varieties. July and August are the critical months. Thorough coverage of all wounds and gummy areas of all major branches is essential. This spray must be applied with a hand gun instead of the mist-blower type sprayer. Lorsban should be applied to peach tree trunks up to scaffold limbs.

PLUMS

SPECIAL SUGGESTIONS

DELAYED DORMANT

Scale insects, red mites, black knot

SUPERIOR OIL, 2 gal.

Apply before buds begin to open. The oil controls scale and mites. Prune out and burn all black knots during the dormant period.

PETAL-FALL THROUGH SECOND COVER

Curculio, brown rot

GUTHION (AZINPHOS METHYL)
50W, $\frac{5}{8}$ lb.

— plus —

BENLATE 50W, 4 oz., plus
CAPTAN 50W, 1 lb.

— or —

CAPTAN 50W, 2 lb.

Apply a spray every 10 to 14 days for three times, starting at petal-fall. Add a miticide if needed. For borer control follow the suggestions given under peaches. Alternate fungicides during the spray program.

Dichloro (Phygon, Quintar) will provide excellent control of brown rot blossom blight.

ADDITIONAL COVERS

Brown rot

BENLATE 50W, 4oz., plus
CAPTAN 50W, 1 lb.

— or —

CAPTAN 50W, 2 lb.

Start these sprays about 3 weeks before harvest and apply about every 7 days. Alternate fungicides during the spray program.

PEARS

DELAYED DORMANT

Pear psylla, scale insects, leaf spot

SUPERIOR OIL, 2 gal., and
FERBAM 76W, 2 lb.

Apply just before buds begin to open.

BLOOM

Fire blight

STREPTOMYCIN, 100 ppm

Three sprays 3 days apart, starting with the first blossoms. May be applied during the day for effective control. Be sure to continue on late blossoms. See early bloom section under apples.

CALYX THROUGH COVER SPRAYS

Codling moth, curculio, leaf spot, scab

GUTHION (AZINPHOS METHYL)
50W, $\frac{5}{8}$ lb.

— plus either —

CAPTAN 50W, 1½ lb., or
FERBAM 76W, 1½ lb.

Start calyx spray as soon as the petals have fallen and continue at 12- to 14-day intervals for at least 3 covers. Later, apply Guthion alone if psylla nymphs are visible on water sprouts.

CHERRIES

APPLICATION AND PURPOSE	MATERIALS, RATE PER 100 GALLONS OF WATER	SPECIAL SUGGESTIONS
DORMANT		
Scale insects	SUPERIOR OIL, 2 gal.	Apply before the buds open.
FIRST AND SECOND COVER SPRAYS		
Brown rot, cherry leaf spot, curculio, slugs	GUTHION (AZINPHOS METHYL) 50W, $\frac{5}{8}$ lb. — plus either — CAPTAN 50W, 2 lb. — or — WETTABLE SULFUR, 6 lb. — or — DICHLONE 50W, $\frac{1}{2}$ lb.	Start right after the shucks have fallen with the first cover. Apply a second cover spray 10 days later. Alternate fungicides during the spray program.
ADDITIONAL SPRAYS		
Cherry leaf spot	CYPREX 65W, $\frac{1}{2}$ lb., or CAPTAN 50W, 2 lb.	Apply immediately after harvest. One or two sprays should be adequate. Spray more if there is more evidence of yellow leaf. A phosphate insecticide may be needed if insects attack leaves. Borers should be controlled as suggested for peaches. Alternate fungicides during the spray program.
See the section on peaches, nectarines, and apricots for suggested borer sprays.		

MITE CONTROL: It is important to avoid using insecticides that are toxic to predatory mites. If phosphate insecticides will kill plant-feeding mites, they will also kill predaceous mites. Miticides, however, may be more selective, and the following miticides can be used without killing predatory mites: KELTHANE, OMITE, OVEX, PLICTRAN, TEDION, and VENDEX. The miticide VYDATE will kill all mites. Some fungicides, such as DIKAR and KARATHANE, give mite suppression and allow good predatory mite survival. BENLATE suppresses both types of mites. Where red mites have been a problem, use oil in the dormant spray.

RESTRICTIONS ON PESTICIDES USED ON TREE FRUITS: The following restrictions are those in effect as of December 1, 1981. Growers are urged to follow directions on the manufacturer's current label at all times. When mixing several pesticides in the same tank, use the time restriction with the longest interval.

Pesticide	Number of days between last application and harvest						Pesticide	Number of days between last application and harvest					
	Apples	Pears	Cherries	Peaches	Plums			Apples	Pears	Cherries	Peaches	Plums	
Benlate	0	0	0	0	0		Mycoshield .....	...	...	...	21	...	
Bordeaux	0	0	0	0	0		Omite	7D	7D	...	14C	28C	
Boiron .....	...	...	1F	1F	8		Ovex .....	...	...	...	7	...	
Caplan	0	0	0	0	0		Parathion	14	14	14	14	14	
Copper sulfate	0	0	...	...	...		Phaltan (folpet)	0	...	...	...	...
Cyrex	7	7	0	15	...		Phosphamidon	30	...	...	...	...
Diazinon	14	14	10	20	10		Phygon (dichloro)	1	...	3	7	3	
Difolatan	A	A	...	...	...		Plictran	14E	14E	...	E	E	
Dikar	30	21	...	...	...		Polycram	30	...	...	...	...
Dihane M-45	30	21	...	...	...		Quintar (dichloro)	1	...	B	7	...	
Ferbam	7	7	0	21	7		Sevin	1	1	1	1	1	
Glyodin	0	0	7	...	...		Sitreptomycin	50	30	...	...	...
Guthion (azinphos methyl)	15	15	15	21	15		Sulfur	0	0	0	0	0	
Imidan	7	7	7	14	7		Systox	21	21	...	30	30	
Karathane	21	21	...	45	...		Tedion	0,E	0,E	0,C	0,C	0,C	
Kelthane	7	7	7	14	7		Thiodan .....	...	...	21C	30C	7C	
Lannate	8	...	...	4	...		Thiram	0	...	...	7	...	
Lime sulfur	0	0	0	0	0		Thiram (thylate)	30	30	...	...	...
Lorsban	A	A	...	14	A		Trihion	14D	14D	...	...	...
Malathion	3	3	3	7	3		Vendex	14	...	...	...	...
Manzate 200	30	15	...	...	...		Vydate	30	7	...	...	...
Mesurof .....	...	...	7D	21E	...		Zineb .....	...	...	...	...	30	

... Not recommended.

A. Dormant application up until 1/4-inch green.

B. Do not apply when fruit is present — apply prebloom or postharvest.

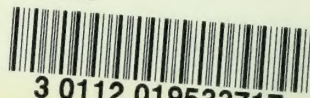
C. Not more than 2 applications to fruit.

D. Not more than 3 applications to fruit.

E. Not more than 4 applications to fruit.

F. Can be used as a fruit dip.

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